

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A semiconductor laser reducing feedback-induced noise by a modulated optical output, comprising:

an active layer having a light-amplifying region and a saturable absorber region formed to allow said semiconductor laser to be in a bistable state and to increase an amplitude of an optical output;

a stochastic resonance electrode of a first polarity configured to inject a current generated by superimposing a noise current on a modulation current into said active layer and to control hysteresis by adjusting the intensity of said modulation current and the intensity of said noise current with respect to each other; and

a stochastic resonance electrode of a second polarity provided in relation to said stochastic resonance electrode of the first polarity, wherein

at least one of said stochastic resonance electrode of the first polarity and said stochastic resonance electrode of the second polarity is divided to allow said current to be injected independently into said light-amplifying region and said saturable absorber region, wherein said stochastic resonance electrodes control said hysteresis to adjust the lasing threshold of the laser and produce said optical output modulated as a stochastic resonance

2. (Canceled)

3. (Canceled)

4. (Previously Presented) The semiconductor laser according to claim 1, wherein said modulation current has a rectangular wave.

5. (Previously Presented) The semiconductor laser according to claim 1, wherein said noise current has a random intensity change.

6. (Previously Presented) The semiconductor laser according to claim 1, wherein a ratio of the length of said saturable absorber region to the entire length of a resonator in the direction of the resonator is at least 1% and at most 50%.

7. (Previously Presented) The semiconductor laser according to claim 1, wherein a difference between a maximum value and a minimum value of said noise current is at most an amplitude of said modulation current injected into said light-amplifying region.

Claims 8-21. (Canceled)

22. (Previously Presented) The semiconductor laser according to claim 1, wherein the hysteresis is controlled by adjusting the noise current until it is stochastically synchronized with the maximum value of the modulated current.

23. (Canceled).